REMARKS

The present amendment is responsive to the Office Action dated November 14, 2007. Claim 1 has been amended. New claim 18 has been added. No new matter has been introduced by the amendment or new claim. Claims 4, 13 and 14 have been cancelled. Claims 1-3, 5-12 and 15-18 are thus presented for consideration by the Examiner in view of the following remarks. A petition for a two (2) month extension of time is submitted concurrently herewith.

Claims 1-10 and 12-17 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,829,327 ("*Chen*") in view of U.S. Patent No. 4,599,741 ("*Whittry*"). Applicants respectfully traverse the rejection.

As an initial matter, applicants note that claim 1 is the sole independent claim in the case. As noted above, claim 1 has been amended. In particular, claim 1 has been amended to include features of claims 4, 13 and 14, which have been cancelled. Applicants would also refer the Examiner to paragraphs 0114, 0117 and 0118 of the Substitute Specification for support for the amendment.

The pending Office Action asserted that *Chen* disclosed all of the elements of claim 1, "except for a monochromator, the beam being directed towards the monochromator." (Office Action, p.2, numbered section 4.) The Office Action also asserted that *Chen* disclosed the features of now cancelled claims 4, 13 and 14. *See* Office Action at numbered sections 6 (p.3) and 12 (p.4.) Applicants respectfully disagree.

The particular configuration of the device of claim 1 as currently amended has the advantage to adapt the beam towards the monochromator (by limiting the divergence in the diffraction plane) while increasing the flux collected from the source and projected on the sample. This is explained in exemplary

embodiments throughout the specification. By way of example only, paragraph 0090 states:

> **[0090]** In the case of an embodiment of the invention with a focusing in the saggital plane (that is to say in the plane XY in Figure 3) the radius of curvature Rx (saggital radius of curvature) can have a value of less than 20 mm, necessary for focusings over short distances, less than 90 cm (the source-point focusing distance) according to one favoured application of the invention.

And paragraphs 0115-0119 state:

> **[0115]** For the purpose of increasing the X-ray flux collected at the sample, it is advantageous to effect a conditioning in a second dimension, for example in the case of Figure 3 in the XY plane (saggital plane).
>
> **[0116]** This makes it possible to limit the divergence in this plane and thus to maximise the X-ray flux collected from the source and projected at the sample after reflection on the monochromator.
>
> **[0117]** This conditioning in the second dimension (still with reference to Figure 3) is carried out whilst ensuring the operating conditions of the monochromator (limiting the angular divergence in the diffraction plane). As indicated previously, the conditioning in the second dimension may be a focusing or a collimation.
>
> **[0118]** The possibility of increasing the flux in the second direction (saggital) by effecting a focusing is notably advantageous as the angular divergence α tolerated in the saggital plane at the monochromator is great in the case of the applications in question.
>
> **[0119]** This is because a divergence α in the second dimension (the saggital dimension) has little effect on the angle of incidence of the incident X-rays on the monochromator in the case of the field of application of the invention (for the focusing conditions encountered and the types of monochromators in question).

A particular advantage of the device as claimed in claim 1 may be to adapt the x-ray beam from the optical element towards the monochromator around the angular acceptance of the monochromator.

In contrast, *Chen* discloses a doubly curved optical element which is adapted to monochromatize and focus an incident X-ray beam in two dimensions. "Doubly-curved optics are capable of diffracting or monochromatizing x-rays in a fashion similar to single-curved optics; but, unlike single-curved optics, doubly-curved optics can provide larger collection solid angles and 3-D x-ray focusing." (Co1.4, ll.33-37) "In contrast to the prior art, a doubly-curve optic not only functions as a monochromator, but also functions as a strong x-ray focuser or concentrator to increase the x-ray flux upon the surface under examination.", and co1l.2, ll.24-28).

According to *Chen*, the focusing in two directions is presented as essential and advantageous for increasing the x-rays flux upon the surface under examination (*see, e.g.*, col.2 ll.24-28 quoted above).

However, *Chen* fails to teach an optical element for producing two respective and different one-dimensional effects, one of these effects being a focusing and the other effect being a collimating effect as this is the case in the present invention. Moreover, *Chen* does not disclose the use of a monochromator coupled to the optical element, nor any specific position of the optical element towards the monochromator. In particular, *Chen* does not disclose or suggest that the optical element is adapted to collimate the beam in one direction in order to limit the divergence in the diffraction plane of the monochromator while focusing the beam in a second direction.

In addressing the admitted deficiencies of *Chen*, the Office Action asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to

modify *Chen* to include a monochromator after the optical element, to accurately monochromatize the X-ray beam, as taught by *Wittry*.

The applicants respectfully disagree with such an assertion. The device of *Chen* is presented as being particularly advantageous because the optical element enables both monochromatization and focusing of the beam (*see* col.4 ll.33-37, and col.2 ll.24-28, as quoted above). Consequently, applicants submit that a person of ordinary skill in the art would not have been motivated to use a further monochromator as disclosed in *Wittry*.

Furthermore, the particular arrangement of the optical element as claimed in claim 1, in particular its arrangement with regard to the monochromator, is not disclosed nor suggested by the combination of *Chen* in view of *Wittry* as applied in the rejection.

Finally, applicants submit that, as best understood, the optical element of Chen is not adapted for collimating the beam in one direction. Thus, a person of ordinary skill in the art at the time the invention was made would not be incited to modify the optical element to this end. Indeed, *Chen* proposes using a distinct device with an aperture. (*see* figure 1 and col.5, ll.46-64) in order to limit the convergent angle of the beam outgoing from the optical element, and therefore to collimate such beam. Specifically:

> In one embodiment of the invention, the total-reflection x-ray fluorescence apparatus includes an aperture 16 for limiting the convergent angle of the diffracted x-rays. This aperture is typically positioned between the x-ray optic 14 and the optical reflection surface 18 being examined, but the aperture 16 may also be positioned between the source 12 and the optic 14. The aperture may also be placed in both positions. Though this aperture may take any desired shape, the aperture is preferably an elongated slot. The slot is typically aligned essentially parallel to

> the surface under examination. The elongated slot is typically between about 10 and 100 mm in length and about 0.1 to 0.5 mm in width, but its dimensions are typically governed by the dimensions and geometry of the optic used. The aperture produces a convergent angle in the dispersion plane for the diffracted x-rays which is less than the critical angle of incidence for the surface to ensure the total reflection of the x-rays from the optical reflection surface for the wavelength of the x-rays.

(Col.5, ll.46-64.)

In view of the above, including the specific structure as claimed and particular advantages of the device of amended claim 1, applicants respectfully submit that claim 1 as presently presented is patentable over the applied combination of *Chen* and *Whittry*. For at least the foregoing reasons, applicants submit that claim 1 is in condition for allowance.

And as claims 2-3, 5-10, 12 and 15-17 depend from independent claim 1 and contain all the limitations thereof, applicants submit that the subject dependent claims are likewise in condition for allowance.

Claim 11 was rejection under 35 U.S.C. § 103(a) as being obvious over *Chen* and *Whittry* in view of U.S. Patent No. 5,373,544 ("*Goebel*"). Applicants respectfully traverse the rejection.

Applicants submit that *Goebel* does not overcome the deficiencies of *Chen* and *Whittry*. Claim 11 depends from independent claim 1 and contains all the limitations thereof. For at least the reasons presented above, applicants submit that claim 11 is likewise in condition for allowance.

As noted above, new claim 18 has been added. Support for claim 18 may be found, by way of example only, in Substitute Specification paragraph 0090. Claim 18 depends from independent claim 1 and contains all the limitations thereof. For at least

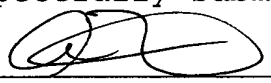
the reasons presented above, applicants submit that claim 18 is likewise in condition for allowance.

As it is believed that all of the rejections set forth in the Office Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he/she telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which may remain. If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: April 10, 2008

Respectfully submitted,

By 

Andrew T. Zidel
Registration No.: 45,256
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK, LLP
600 South Avenue West
Westfield, New Jersey 07090
(908) 654-5000
Attorney for Applicant

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